

### **REMARKS**

Claims 1-3 and 5-9 are pending in this application. The specification and claims 1, 5, and 9 have been amended. Claim 4 has been canceled. In view of the amendments to the claims and the remarks below, Applicant respectfully requests that the rejections be withdrawn and that the claims be allowed.

The specification stands objected to because of informalities. The specification has been amended to correct the informalities. Page 3, line 29 has been amended to that character 20 consistently refers to “blocks.” Page 3, line 23 has been amended so that the character 418 consistently refers to “pivots.” Page 7, line 29 has been amended to refer to Figure 5. Applicant respectfully requests that the objection be withdrawn.

Claims 1-3 and 9 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,322,472 to Schulze-Beckinghausen (“Schulze-Beckinghausen”). The rejection is respectfully traversed.

Claim 1 has been amended to incorporate the limitations of former claim 4. Claim 1, as amended, recites an actuator comprising a series of elements each rotatable relative to the next “wherein the elements are hollow.” Claim 1 includes a drive means with “at least one gear wheel located inside the elements” that “drivingly engages an inside surface of the elements.” As admitted in the Office Action at page 4, Schulze-Beckinghausen does not teach these features.

Applicant recognizes that U.S. Patent No. 3,766,801 to Wiegand (“Wiegand”) has been cited against claim 4 as teaching these features. Wiegand, however, does not teach or suggest “at least one gear wheel located inside the elements” that “drivingly engages an inside surface of the elements.” The Office Action refers to the “internal gear 48” of Wiegand, and states that since the gear is internal, it is construed that the gear drivingly engages the inside surface of elements. The term “internal gear,” however, is a technical term known to those of ordinary skill in the art as a gear “having teeth on the inner surface of its rim.” See McGraw-Hill Dictionary of Scientific and Technical Terms (6th Edition) (excerpt attached). This is entirely consistent with Figure 2 of

Wiegand, which depicts teeth visible on the inside surface of the gear 48. Accordingly, Wiegand's gear is not located inside the elements, drivingly engaged to an inside surface of the elements. Instead, the gear 48 is internal in the sense that it is driven on its inside by pinion gear 56 which is on the input side, being driven by the handle (not shown in Figure 2, but visible in Figure 1), as set forth in column 3, lines 18-27. Thus, Wiegand does not teach or suggest a gear wheel "located inside the elements" that "drivingly engages an inside surface of the elements."

Moreover, Wiegand does not teach elements that are hollow. Claim 1 describes a series of elements each rotatable relative to the next, guided to follow a non-linear path to an exit of a housing, wherein the "elements are hollow." See Figure 6 of the present application (depicting a hollow element). The Office Action at page 4 asserts that Wiegand teaches hollow elements at column 3, lines 8-10. These lines describe a "grooved portion 44, having a peripheral groove 46 therein and supported by the spokes 42." None of these three items are described or depicted as "hollow." Additionally, the grooved portion 44 cannot meet the plural "elements" of claim 1 because Wiegand discloses only a single grooved portion. Wiegand therefore does not teach or suggest the hollow elements of claim 1.

For at least these reasons, claim 1 is allowable over the prior art of record. Claim 2 depends from claim 1 and is allowable for at least the same reason that claim 1 is allowable. Claim 3 depends from claim 2 and is allowable for at least the same reason that claim 2 is allowable.

Claim 9, as amended, recites a device for moving a load that includes a means for moving a load bearing portion with elements that "are hollow" and including "at least one gear wheel located inside the elements as they pass through the housing and which drivingly engages an inside surface of the elements." As explained above in reference to claim 1, these elements are not disclosed in Wiegand. Claim 9 is therefore allowable for similar reasons that claim 1 is allowable, and for other reasons.

Claims 5-7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Schulze-Beckinghausen in view of Wiegand. The rejection is respectfully traversed.

Claims 5 and 6 depend from claim 2 and incorporates every limitation of claim 2. As discussed above, claim 2 is allowable over Schulze-Beckinghausen, even in view of Wiegand. Therefore, claim 4 is allowable for at least the same reasons that claim 2 is allowable. Claim 7 depends from claim 6 and is allowable for at least the same reason that claim 6 is allowable.

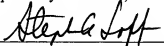
Claim 8 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Schulze-Beckinghausen in view of U.S. Patent No. 6,419,603 to Grasl ("Grasl").

Claim 8 depends from claim 1 and incorporates every limitation of claim 1. As discussed above, claim 1 is allowable over Schulze-Beckinghausen, even in view of Wiegand, and Grasl fails to add anything to remedy the deficiencies of the references with respect to claim 1. Therefore, claim 8 is allowable for at least the same reasons that claim 1 is allowable.

In view of the above amendment, Applicant believes the pending application is in condition for allowance. If there are any additional charges in connection with this filing or any subsequent filings (including but not limited to issue fees), the Examiner is respectfully requested and authorized to charge Deposit Account No. 04-1073 therefor under Order No. M0025.0312/P312.

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# **McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS**

**Sixth  
Edition**

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**internal drift current** [OCEANOGR] Motion in an underlying layer of water caused by shearing stresses and friction created by current in a top layer that has different density. (in'tam-ol 'drift-ko-rant)

**internal-drum laser scanning** [GRAPHICS] A method for the direct exposure of printing plates in which a laser beam is swept across a plate that is placed on the inside of a stationary drum by a rotating mirror inclined at an angle of 45° to the axis of the drum; the beam is modulated by video signals from a similar reading system or digital signals from a computer. (in'tam-ol 'drum 'lā-zər 'skān-ŋg)

**internal ear** See inner ear. (in'tam-ol 'ir)

**internal elastic membrane** [ANAT] A sheet of elastin found between the tunica intima and the tunica media in medium- and small-caliber arteries. (in'tam-ol 'i-las-tik 'mem-brān)

**internal energy** [THERMO] A characteristic property of the state of a thermodynamic system, introduced in the first law of thermodynamics; it includes intrinsic energies of individual molecules, kinetic energies of internal motions, and contributions from interactions between molecules, but excludes the potential or kinetic energy of the system as a whole; it is sometimes erroneously referred to as heat energy. (in'tam-ol 'en-er-jē)

**internal erosion** [GEOL] Erosion effected within a compacting sediment by movement of water through the larger pores. (in'tam-ol 'i-rō-shān)

**internal fertilization** [PHYSIO] Fertilization of the egg within the body of the female. (in'tam-ol 'fard-ol 'o-ŋt-shān)

**internal fistula** [ANAT] A fistula which has no opening through the skin. (in'tam-ol 'is-ŋt-ŋt)

**internal floating-head exchanger** [MECH ENG] Tube-and-shell heat exchanger in which the tube sheet (support for tubes) at one end of the tube bundle is free to move. (in'tam-ol 'floid-ŋg 'hed 'is-ŋt-ŋt)

**internal font** [GRAPHICS] A typeface or set of typefaces that is stored in the permanent memory of a printer. Also known as built-in font. (in'tam-ol 'fnt)

**internal force** [MECH] A force exerted by one part of a system on another. (in'tam-ol 'fōr)

**internal friction** [PHYSICS] See viscosity. [MECH] 1. Conversion of mechanical strain energy to heat within a material subjected to fluctuating stress. 2. In a powder, the friction that is developed by the particles sliding over each other; it is greater than the friction of the mass of solid that comprises the individual particles. (in'tam-ol 'frik-shān)

**internal furnace** [MECH ENG] A boiler furnace having a firebox within a water-cooled heating surface. (in'tam-ol 'furn-ns)

**internal gas drive** [PETRO ENG] A primary oil recovery process in which oil is displaced from the reservoir by the expansion of the gas originally dissolved in the liquid. Also known as dissolved-gas drive; gas depletion drive; solution gas drive. (in'tam-ol 'gas 'driv)

**internal gear** [DES ENG] An annular gear having teeth on the inner surface of its rim. (in'tam-ol 'gir)

**internal granular layer** [NEUROL] The fourth layer of the cerebral cortex. (in'tam-ol 'gran-ŋl-er 'lā-er)

**internal grinder** [MECH ENG] A machine designed for grinding the surfaces of holes. (in'tam-ol 'grind-er)

**internal hemorrhage** [COMPUT SCI] A condition in which a computer program continues to run following an error but produces dubious results and may adversely affect other programs or the performance of the entire system. [MED] Bleeding within a body cavity or organ that is concealed from an observer. (in'tam-ol 'hem-ri-j)

**internal hernia** [MED] A hernia of intrabdominal contents occurring within the abdominal cavity. (in'tam-ol 'her-ns)

**internal hydrocephaly** See obstructive hydrocephaly. (in'tam-ol 'hid-ŋd-ŋs-ŋf-ŋl)

**internal iliac artery** [ANAT] The medial terminal division of the common iliac artery. (in'tam-ol 'il-ŋk 'ar-ter-ŋl)

**internal interrupt** [COMPUT SCI] A signal for attention sent to a computer's central processing unit by another component of the computer. (in'tam-ol 'int-er-rupt)

**internalization** [PSYCH] A mental mechanism operating outside of and beyond conscious awareness by which certain

external attributes, attitudes, or standards are taken within oneself. (in'tam-ol 'o-ŋt-shān)

**internal label** [COMPUT SCI] An identifier providing a name for data that is recorded with the data in a storage medium. (in'tam-ol 'is-bāl)

**internal line** [QUANT MECH] A component of a Feynman graph (in the diagrammatic presentation of perturbative quantum field theory) describing the propagation of a virtual particle whose momentum is integrated over all possible values. (in'tam-ol 'lān)

**internal loss** See loss. (in'tam-ol 'lōs)

**internally fired boiler** [MECH ENG] A fire-tube boiler containing an internal furnace which is water-cooled. (in'tam-ol 'fird 'bōil-er)

**internally stable set** See independent set. (in'tam-ol 's-ŋt-bol 'set)

**internally stored program** [COMPUT SCI] A sequence of instructions, stored inside the computer in the same storage facilities as the computer data, as opposed to external storage on tape, disk, drum, or cards. (in'tam-ol 's-tōrd 'prō-gram)

**internally tangent circles** [MATH] Two circles, one of which is inside the other, that have a single point in common. (in'tam-ol 's-tān-ŋst 'sē-kle-ŋz)

**internal mechanical environment** [IND ENG] A concept that considers parts of the human body, such as muscles, bones, and tissues, in terms of how they are subject to Newtonian mechanics in their interaction with the external environment. (in'tam-ol 'mīk'an-ŋ-ŋol 'in-vi-rōn-mēnt)

**internal memory** See internal storage. (in'tam-ol 'mem-ri)

**internal mix atomizer** [MECH ENG] A type of pneumatic atomizer in which gas and liquid are mixed prior to the gas expansion through the nozzle. (in'tam-ol 'mīks 'ad-ŋt-ŋz-er)

**internal operation** [MATH] For a set  $S$ , a function whose domain is a set of members of  $S$  or a set of ordered sequences of members of  $S$ , and whose range is a subset of  $S$ . (in'tam-ol 'it-p-er-ŋt-shān)

**internal oxidation** [MET] The subsurface oxidation of components of an alloy due to oxygen diffusion into the metal. (in'tam-ol 'it-ŋk-ŋd-ŋt-shān)

**internal phase** See disperse phase. (in'tam-ol 'fāz)

**internal photoelectric effect** [SOLID STATE] A process in which the absorption of a photon in a semiconductor results in the excitation of an electron from the valence band to the conduction band. (in'tam-ol 'fōd-ŋt-ŋk-ŋt-ŋk 'fekt)

**internal photoionization** See Auger effect. (in'tam-ol 'fōd-ŋt-ŋt-ŋt-ŋt-shān)

**internal pressure** See intrinsic pressure. (in'tam-ol 'prēsh-er)

**internal reader** [COMPUT SCI] A device that reads jobs and data into a computer from on-line storage, emulating a card reader. (in'tam-ol 'rēd-er)

**internal reflectance spectroscopy** See attenuated total reflectance. (in'tam-ol 'rifl-ŋk-ŋt-ŋt-ŋt 'spek-tris-kōp-ŋ)

**internal reflection** [OPTICS] The reflection of electromagnetic radiation in a given medium from the boundary with a less dense medium. (in'tam-ol 'rifl-ŋk-shān)

**internal resistance** [ELEC] The resistance within a voltage source, such as an electric cell or generator. (in'tam-ol 'ri-zis-tāns)

**internal respiration** [PHYSIO] The gas exchange which occurs between the blood and tissues of an organism. (in'tam-ol 'res-p-er-ŋt-shān)

**internal scheme** [COMPUT SCI] The physical configuration of data in a data base. (in'tam-ol 'skē-m)

**internal secretion** [PHYSIO] A secreted substance that is absorbed directly into the blood. (in'tam-ol 'si-kret-shān)

**internal sedimentation** [GEOL] Accumulation of clastic or chemical sediments derived from the surface of, or within, a more or less consolidated carbonate sediment (mud or silt); deposited in secondary cavities formed in the host rock (after its deposition) by bending of laminae or by internal erosion or solution. (in'tam-ol 'sed-ŋt-ŋt-ŋt-shān)

**internal sorting** [COMPUT SCI] The sorting of a list of items by a computer in which the entire list can be brought into the main computer memory and sorted in memory. (in'tam-ol 'sōrt-ŋg)

**internal spring safety relief valve** [ENG] A spring-loaded

INTERNAL GEAR



A helical internal gear and pinion. (Fellows Corp.)